Market Risk Capital in PNB and ICICI Bank during Basel II-
A Study on Pattern, Determinants and Impact

Abstract

The purpose of this study was to analyze the pattern and determinants of market risk capital in PNB and ICICI ban during Basel II. The researcher tried to assess the impact of MRC on the market risk management efficacy of these banks. Results suggest that MRC has shown increasing trend in both these banks. It remained more in ICICI bank than PNB during entire Basel II period. It revealed that the volume of investment portfolio in ICICI bank was more and hence requiring more capital. We find highly positive correlation between MRC and its determinants i.e. government securities, bank bonds, other securities and equity in PNB and ICICI bank. Significant relationship existed between bank bonds and MRC when either of both is taken as dependent variable in PNB. Primary data shows that most of the employees of PNB and ICICI bank rated organisational structure and early warning system of their banks either very good or good due to adoption of effective market risk management of Basel II. The respondents also supported the view that market risk assessment in business processes has been incorporated in the market risk management.

Keywords: Market Risk Capital, PNB, ICICI Bank, Market Risk Management, Government Securities, Bank Bonds, Other Securities and Equities

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Introduction

Over the past three decades, the banking and financial system have witnessed extraordinary changes. Globalization resulted in dramatic changes across countries in the banking sector. After sovereign defaults in Latin America, the Basel Committee on Banking Supervision completed the Basel Agreement in 1988 after six years of deliberations. By establishing a direct link between a bank's capital and its credit risk, Basel I focused primarily on credit risk, not operational risks. In other words, there was very limited risk sensitivity in the Basel I Agreement and there is no risk differentiation to measure credit risk.

Other types of risks, however, were later incorporated. For example, in 1996, the committee amended the 1988 Agreement to incorporate market risk capital requirements (BCBS, 1996). In September 1997 and November 2005, this amendment was also amended. It adopted two alternative approaches to market risk measurement: a standardized methodology and an approach to internal models.

Meanwhile, the 1988 Accord has two main components, which include:
1. The measurement of qualifying capital (the numerator) and
2. The determination of risk-weighted assets (the denominator)

Qualifying capital consists of the capital of Tier I and Tier II. Tier 1 or core capital (the numerator) comprises common stock, retained earnings, surplus, non-cumulative preferred stock, minority interest in consolidated subsidiaries ' equity accounts, and selected identifiable intangible assets. Tier 2 or additional capital includes qualifying subordinated debt, cumulative preferred stocks and capital certificates, loan loss reserves not exceeding 25% of risk-weighted assets, non-withdrawal accounts and pledged deposits not included in core capital. Additional capital items are considered to be less stable for loss protection.

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The risk-based Basel I Agreement denominator measures the credit risk exposure of banks. The risk weighted asset (RWA) is calculated by multiplying each asset item on the balance sheet of a bank and any off balance sheet commitment by risk weighting factor designed to reflect credit risk exposure and summarizing the weighted asset categories to create risk weighted assets. So the ratio of capital adequacy can be formulated as under.

Capital Adequacy Ratio =

$$\frac{\text{Total Tier 1 + Tier 2 Capital}}{\text{Total Risk Weighted Assets}}$$

Because of its focus on primarily credit risk and the treatment of all types of borrowers under one risk category, the Basel I Accord has been criticized as inflexible. Consequently, Basel I failed to establish a level playing field because it dealt primarily with capital standards and not other differentiating factors such as legal and accounting systems; and, more importantly the size of the explicit (or implicit) government safety net among banks.

Basel II Agreement was signed in 2004 to es tablish an international standard that banking regulato rs can use when regulating how much capital banks h ave to set aside to prevent their financial and operatio nal risks.

Basel II fills the gap by setting rigorous requirements f or risk and capital management to ensure

that a bank maintains capital reserves appropriate to t he risk that the bank exposes itself through its investm ent and lending practices (BIS 2004).It   highlighted three mutually reinforcing pillars: capital requirements, supervisory review, and market discipline. The first pillar represents a significant enhancement of the minimum requirement laid down in the 1988 agreement to ensure a more risk sensitive allocation of capital. Innovative additions to capital supervision and market discipline are the second and third pillars.

Market Risk

It is defined as the risk of losses arising from movements in market prices. The market risk is of four types viz; Interest rate risk, Equity risk, Currency risk and Commodity risk.

Interest rate risk is the risk that the value of an investment will change as a result of a change in the absolute interest rate level. Interest rate risk has a more direct impact on the value of bonds than stocks and is a major risk to all bondholders.

Bond prices are falling as interest rates rise, and vice versa.The rationale is that the opportunity cost of holding bonds decreases as interest rates rise, as investors can realize higher yields by switching to other investments reflecting the higher interest rate. It is mainly governed by the government's monetary policy

It can be reduced by diversifying (investing in fixed income securities with different durations) or hedging (such as through an interest rate swap)

Equity risk is "the financial risk involved in holding equity in   a   particular   investment". Equity risk often refers to equity in companies through the purchase of stocks.

Typically, the risk measure used in equity markets is the standard deviation of the price of a security over a number of periods. The standard deviation will define the normal fluctuations that can be expected above and below the mean or average in that particular security.

Common stock is one of a public company's equity instruments for raising funds from the public. Another type of equity instrument similar to common bonds is convertible debenture.

As in common stock, preferred stock, another equity instrument, involves the participation of shareholders as a business owner. Depository receipt is an equity instrument that entitles common bonds, ordinary debentures, and convertible debentures to reference rights. Transferable Subscription Rights (TSR) is an equity instrument issued by a company in proportion to all shareholders.

Currency risk, sometimes referred to as exchange rate risk, is the possibility that currency depreciation will adversely affect the value of one's assets, investments, and related interest and dividend payment streams, particularly those foreign currency denominated securities.

Commodity risk refers to the uncertainties of future market values and future revenue size caused by commodity price fluctuations. These commodities may include grains, metals, gas, electricity, prices of crude oil, etc.

Market Risk Management Policy in PNB and ICICI Bank

Risk Management Policies

PNB and ICICI bank have in place a well defined organizational structure for market risk management functions, which looks into the process of overall management of market risk viz. interest rate risk & liquidity risk and implements methodologies for measuring and monitoring the same. Tools like stress testing, duration, modified duration, Value at Risk (VaR) etc are being used effectively in managing risk in the Treasury operations. These Banks have actively reshuffled the portfolio to improve profitability within risk limits.

Investment policy covering different aspects of market risk attempts to assess and minimize the risks inherent in treasury operations through different risk management tools. In treasury operations, it broadly incorporates policy prescriptions for measuring, monitoring, and managing systemic risk, credit risk, market risk, operational risk, and liquidity risk.

In addition to regulatory limits, the banks have set internal limits and ensure continuous adherence to them in the bank's trading book and its business operations to manage market risk. Banks are continuously tracking the migration of investment portfolio credit ratings.

Limits for exposures to counter-parties, industry segments and countries are monitored and the risks are monitored and controlled through Stop Loss Limits, Overnight limit, Daylight limit, Aggregate Gap limit, Individual gap limit, Value at Risk (VaR) limit for Forex, Inter-Bank dealing and investment limits etc.

Liquidity risk is assessed through gap analysis for maturity mismatch based on residual

maturity in different time buckets as well as different liquidity ratios and it is managed within the prudential limits set thereon. At regular intervals, advance techniques such as stress testing, simulation, sensitivity analysis etc. are used to draw the contingency funding plan under different liquidity scenarios.

Factors Influencing Investment in Market Risk Capital

According to the RBI's prudential guidelines, Held for Trading (HFT) and Available for Sale (AFS) securities would be classified as Trading Book and taken for market risk calculations.

Held to maturity (HTM) securities are usually in the form of debt security with a specific maturity which does not require calculations for risk weighted assets.

While calculating specific risk, government securities do not require market risk regulatory capital as they are fully secured and are not influenced by price movement. Depending on the maturity period of these bonds, varying amounts of capital charged are required on bank and corporate bonds from 0.3% to 1.80%. For lower-maturity bonds, less market capital is required. Other securities attract market risk capital of 9% on a flat rate basis.

For at least two reasons, bonds are considered less risky investments. First, returns on the bond market are less volatile than returns on the stock market. Second, if the company finds itself in trouble, bondholders will be paid first before other expenses are paid. In this scenario, shareholders are less likely to receive compensation.

Outstanding in Investment portfolio and capital for market risk in PNB and ICICI bank as on 31st March during the Basel II period is depicted in Table1,2 and 3 as under;

Table: 1 Investment Breakup of PNB during the Basel II Period (2009-2014)

(Rs in Crores)

| YEAR | Break-Up of Total Investments | | | | Equity | Grand Total |
| | Interest Rate Related Instruments | | | | | |
	Govt. Securities	Bank Bonds	Other Securities	Total		
2009	54530.82	4470.36	2563.61	61537.79	1205.71	62770.50
2010	65970.43	3032.67	6978.48	75981.58	1742.89	77724.47
2011	79501.72	4862.89	8564.82	92929.43	2232.92	95162.35
2012	99759.45	7636.75	12622.34	120018.54	2610.93	122629.47
2013	107598.58	9968.91	9755.06	127322.55	2573.64	129896.19
2014	112290.41	18111.36	10629.51	141031.28	2754.22	143785.50

(*Compiled from Annual reports of PNB)*

Table: 2 Investment Breakup of ICICI Bank during the Basel II Period (2009-2014)

(Rs in Crores)

| YEAR | Break-up of total investments | | | | Equity | Grand Total |
| | Interest rate related instruments | | | | | |
	Govt. Securities	Bank bonds	Other securities	Total		
2009	63472.82	2600.07	35282.29	101355.18	1703.13	103058.31
2010	68563.65	3635.39	45938.02	118137.06	2755.74	120892.80
2011	65014.94	16146.29	50711.32	131872.55	2813.41	134685.96
2012	87387.98	19513.52	50366.28	157267.78	2292.26	159560.04
2013	93033.77	17477.52	59377.22	168888.51	2505.09	171393.60
2014	95891.65	12120.36	66608.02	174620.03	2401.79	177021.82

(*Compiled from Annual reports of ICICI bank)*

Table: 3 Showing Market Risk Capital of PNB and ICICI bank during Basel II.

| Year | Capital for Market Risk (Rs in Crore) | |
	PNB	ICICI bank
2009	641.58	1862.82
2010	662.42	1989.54
2011	941.96	2299.68
2012	1400.00	2417.94
2013	1760.06	2292.12
2014	2438.78	2391.66

(*Compiled from Annual reports of PNB and ICICI bank)*

Review of Literature

Munstermann, Beate and Jacob, David,(2005) in their article *"Basel II and Banks: Key Aspects and likely Market Impact"* have tried to identify the potential implications spread for bank bonds, sovereign debt and covered bonds because with different portfolio mixes, the ratios would be changed due to the impact of Basel norms.

Verma, Dippi and Supatha, (2010) highlighted in their research the utility of Value at Risk (VaR) as a tool for measurement and control of Market Risk in the banking sector. 'Value at Risk' has been called the "New Science of Risk Management", it calculates the maximum loss expected on an investment, over a given period of time and given a specified degree of confidence.

Matsakh, Altintas, & Callender, (2010): External and internal prospects for maintaining adequate capital require banks to carefully stabilise and harmonise the capital management process. These perspectives vary on the need of capital to be maintained and the composition of the capital structure, the capital structure mix and the participants for review

Raju, Thiripal and Acharya, Rajesh, (2010) conducted a research which examined the cost of equity for major banks in India in the wake of financial crisis, as the rise in the cost of equity is mainly associated with the rise in the risk free rate and partly due to increase in the sensitivity of bank stock returns to market risk. The research studied 19 bank stocks listed on BSE, both public and private. The research derives a conclusion that the cost of equity for Indian banks, both public and private based on a single factor Capital Asset Pricing Model (CAPM). The major contribution for rise in the cost of equity came from increase in risk free rate and marginally by rising CAPM Beta.

Singh, Manmeet and Vyas, R.K, (2011) conducted a research on private and public sector banks and international banks operating in India evaluating the impact of portfolio risk on performance of the banks under study. The research derived the conclusion that portfolio risk plays an important role in earning higher returns to banks on the basis of a comparative study of the above banks in turn analyzing the degree of risk, particularly portfolio risk, capital adequacy ratio and return on assets. Profitability of banks can be improved by Capital Adequacy as it reduces the cost of funding to banks.

Research Objectives
1. To analyze the pattern and determinants of capital requirement for market risk in PNB and ICICI bank.
2. Analysis of responses of employees of PNB and ICICI bank on market risk management during Basel II

Research Methodology
Scope of study
Two banks Punjab National Bank and ICICI bank representing public sector and private sector bank respectively have been taken for the study. PNB is one of the leading public sector banks and the largest in terms of total business among nationalized banks. ICICI bank on the other hand is one of the oldest and largest private sector banks having total business neck to neck with PNB. The period of study has been considered from year 2009 to 2014 coinciding with period of Basel II in India.

Research Design
The present study used exploratory as well as descriptive research design.

Analysis of Data
Data Analysis and Interpretation
The present study used exploratory as well as descriptive research design.

Data Collection
This research used both primary as well as secondary data. For primary data, a structured questionnaire was mailed to target respondents of PNB and ICICI bank. Secondary data was collected from annual reports of these banks and from money control.com etc.

Sampling Design
For Objective 1
Secondary data were analyzed for correlation and regression.

For Objective 2
Population
Officials of various departments related to Risk Management in PNB and ICICI bank were contacted and questionnaires were mailed to them.

Sample Size
Out of 50 mailed questionnaires each to employees of Integrated Risk Management Departments of PNB and ICICI bank, 42 officials of PNB and 40 officials of ICICI bank have responded. Out of these, researcher selected completely filled questionnaire of 26 respondents of PNB and ICICI bank each for analyzing the perception of employees.

Sampling Technique
Non- probability convenience sampling technique was used to select the individual respondents.

Data Analysis
Relevant statistical techniques such as pearson's correlation, regression analysis, were chosen and applied in accordance with the requirements of objectives of the study.

Objective 1 To study the Pattern and Analyze the determinants of MRC in PNB and ICICI Bank
Besides classifying investments into Held till maturity (HTM), Available for sale (AFS) and Held for trading (HFT) in terms of RBI guidelines, balance sheet discloses the investments as per the existing six classifications viz; Govt. securities, debentures and bonds, shares/equity, other approved securities, subsidiaries/joint ventures and others (CP, Mutual fund units etc.).

Munstermann, Beate and Jacob, David (2005) tried to identify the potential implications spread for bank bonds, sovereign debt and covered bonds because with different portfolio mixes, the ratios would be changed due to the impact of Basel norms. So in our study we considered government securities, bank bonds, other securities and equity being a part of investment portfolio as determinants of market risk capital and tried to find out whether the investment portfolio size have significant relationship with market risk capital during Basel II period.

Figure 4: Pattern of Market Risk Capital and Interest Related Investments (govt. securities, bank bonds, equity and other securities) in Punjab National Bank and ICICI Bank
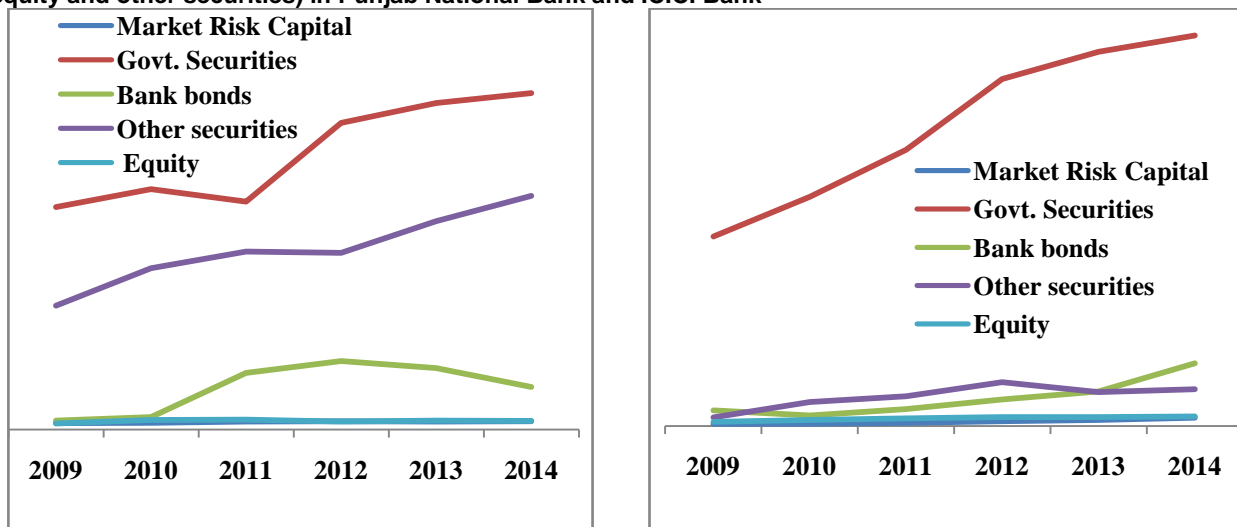
The first graph of PNB is showing an increasing trend in Investment in government security during the entire Basel II period. It registered a sharp increase from year 2011 to 2012 due to increase in investments in bank bonds and other securities. During this period capital for market risk soared up due to substantial increase in interest rate risk variables and volatility in Indian market.

In ICICI bank, investments in bank bonds and other securities are more than that of PNB whereas investments in govt securities are less than PNB. Even though ICICI bank could effectively manage its interest related investment portfolio in a manner that has enabled it to keep capital requirement for market risk almost constant throughout the Basel II period. Further ICICI bank showed decline in equity portfolio in 2012 resulting in decease in market risk capital over the previous year.

Table 5: Correlation table of variables MRC, government securities, bank bonds, other securities and equity in PNB

Correlations		MRC	Govt securities	Bank bonds	Other securities	Equity
MRC	Pearson Correlation	1	.945[**]	.959[**]	.696	.856[*]
	Sig. (2-tailed)		.004	.003	.125	.030
	N	6	6	6	6	6
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

We find highly positive correlation between market risk capital and government securities, bank bonds, other securities and equity. This signifies that increase in market risk capital is related with an increase in the volume of these variables positively.

Table 6: **Correlation table of variables MRC, government securities, bank bonds, other securities and equity in ICICI bank**

Correlations		MRC	Govt securities	Bank bonds	Other securities	Equity
MRC	Pearson Correlation	1	.734	.910[*]	.805	.409
	Sig. (2-tailed)		.097	.012	.053	.421
	N	6	6	6	6	6

Correlation is significant at the 0.05 level (2-tailed).

We find high positive correlation between MRC and Bank bonds, other securities and government securities. MRC and equity had low positive correlation.

Table 7: Results of Linear regression when capital for market risk as dependent variable in PNB

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	Collinearity Statistics		
		B	Std. Error	Beta			Lower Bound	Part	Tolerance	VIF
1	(Constant)	-460.762	95.919		-4.804	.131	-1679.522			
	Govt securities	.016	.003	.529	4.863	.129	-.026	.093	.031	32.612
	Bank bonds	.077	.006	.604	13.849	.046	.006	.264	.191	5.239
	Other securities	-.013	.017	-.065	-.793	.573	-.224	-.015	.054	18.427
	Equity	-.049	.166	-.042	-.298	.816	-2.155	-.006	.018	55.126

a.   Dependent Variable: Capital for Market Risk

Table 8: Results of Linear Regression When Capital for Market Risk as Dependent Variable in ICICI Bank

Dependent variable: Capital for market risk

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1593.034	625.128		2.548	.238	-6349.975	9536.043		
	Govt securities	-.001	.010	-.089	-.130	.917	-.135	.132	.132	7.564
	Bank bonds	.022	.011	.686	2.042	.290	-.113	.156	.545	1.834
	Other securities	.010	.015	.498	.700	.611	-.180	.201	.121	8.240
	Equity	-.030	.230	-.053	-.131	.917	-2.956	2.895	.375	2.666

Table 9: Regression output table showing relationship of market risk capital with investment portfolios of PNB and ICICI bank

S. No.	Hypothesis	Sig	Result
H_{01}	Capital for market risk in PNB has no significant impact on investments in Government securities	.129	Not rejected
H_{02}	Capital for market risk in PNB has no significant impact on investments in Bank bonds	.046	Rejected
H_{03}	Capital for market risk in PNB has no significant impact on investments in other securities	.573	Not rejected
H_{04}	Capital for market risk in PNB has no significant impact on investments in equity.	.816	Not rejected
H_{05}	Capital for market risk in ICICI bank has no significant impact on investments in Government securities	.917	Not rejected
H_{06}	Capital for market risk in ICICI bank has no significant impact on investments in Bank bonds	.290	Not rejected
H_{07}	Capital for market risk in ICICI bank has no significant impact on investments in other securities	.611	Not rejected
H_{08}	Capital for market risk in ICICI bank has no significant impact on investments in equity.	.917	Not rejected

Analysis of multiple regression table of PNB indicates that Bank bonds have significant impact on the capital for market risk. Thus null hypothesis H_{02} is rejected. There is high positive correlation between MRC and bank bonds. It means that bank bonds are an important determinant in deciding the market risk capital in PNB. The present study does not find any significant impact by other investment portfolio. Thus null hypotheses H_{01}, H_{03} and H_{04} are not rejected.

The research finds that Market risk capital when taken as dependent variable, has no significant relationship with investment mix at 5% level of confidence in ICICI bank during 2009-2014. Hence the null hypothesis H_{05}, H_{06}, H_{07} and H_{08} of non significant relationship is not rejected. Thus the

market risk management in both the banks is efficient to control and monitor the market risk and recommend

changes in policies and methodologies for measuring it from time to time as per the instructions of regulator.

Table 10: Linear regression between government securities and MRC in PNB

Co efficients[a]

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	46095.905	9141.629		5.042	.007		
	MRC	30.986	6.273	.927	4.940	.008	1.000	1.000

a. Dependent Variable: G securities

Table 11: Linear regression between bank bonds and MRC in PNB .

Co efficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1976.261	1312.220		-1.506	.207		
	MRC	7.641	.900	.973	8.486	.001	1.000	1.000

a. Dependent Variable: Bank bonds

Table12: Linear regression between other securities and MRC in PNB.

Co efficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4170.482	2661.025		1.567	.192		
	MRC	3.326	1.826	.673	1.821	.143	1.000	1.000

a. Dependent Variable: Other securities

Table13: Linear regression between equity and MRC in PNB.

Co efficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1251.201	339.673		3.684	.021		
	MRC	.716	.233	.838	3.070	.037	1.000	1.000

a. Dependent Variable: Equity

Table 14: Linear regression between Government securities and MRC in ICICI bank.

Co efficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-26409.106	48971.615		-.539	.618		
	MRC	47.671	22.072	.734	2.160	.097	1.000	1.000

a.   Dependent Variable: G securities

Table 15: Linear regression between bank bonds and MRC in ICICI bank.

Co efficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-51875.724	14587.999		-3.556	.024		
	MRC	28.878	6.575	.910	4.392	.012	1.000	1.000

a. Dependent Variable: Bank bonds

Table 16: Linear regression between other securities and MRC in ICICI bank.

Co efficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-33026.304	31234.286		-1.057	.350		
	MRC	38.211	14.077	.805	2.714	.053	1.000	1.000

a. Dependent Variable: Other securities

Table17: Linear regression between equities and MRC in ICICI bank.

Co efficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	822.289	1780.551		.462	.668		
	MRC	.720	.803	.409	.897	.421	1.000	1.000

a. Dependent Variable: Equity

Table 18: Regression output table of Interest related investments (govt. securities, bank bonds, equity and other securities) and market risk capital in Punjab National bank and ICICI bank.

S. No.	Hypothesis	Sig	Result
H_{01}	Government securities in PNB have non- significant impact on Capital for market risk.	.004	Rejected
H_{02}	Bank bonds in PNB have non- significant impact on Capital for market risk.	.003	Rejected
H_{03}	Investments in other securities in PNB have non- significant impact on Capital for market risk.	.125	Not rejected
H_{04}	Equity in PNB has non- significant impact on Capital for market risk.	.030	Rejected
H_{05}	Government securities in ICICI bank has non- significant impact on Capital for market risk	.097	Not rejected
H_{06}	Bank bonds in ICICI bank have non- significant impact on Capital for market risk.	.012	Rejected
H_{07}	Investments in other securities in ICICI bank have non- significant impact on Capital for market risk.	.053	Not rejected
H_{08}	Equity in ICICI bank has non- significant impact on Capital for market risk.	.421	Not rejected

Since a continuous increase in MRC during the Basel II period is related with an increase in G. securities, bank bonds and equity in PNB, there is significant relationship and thus null hypothesis H_{01}, H_{02} and H_{04} is rejected. Whereas it is observed that changes in MRC has no relationship with other securities The present study finds significant relationship of market risk capital with bank bonds in ICICI bank indicating changes is MRC also reflects in changing the level of bank bonds significantly. It means that ba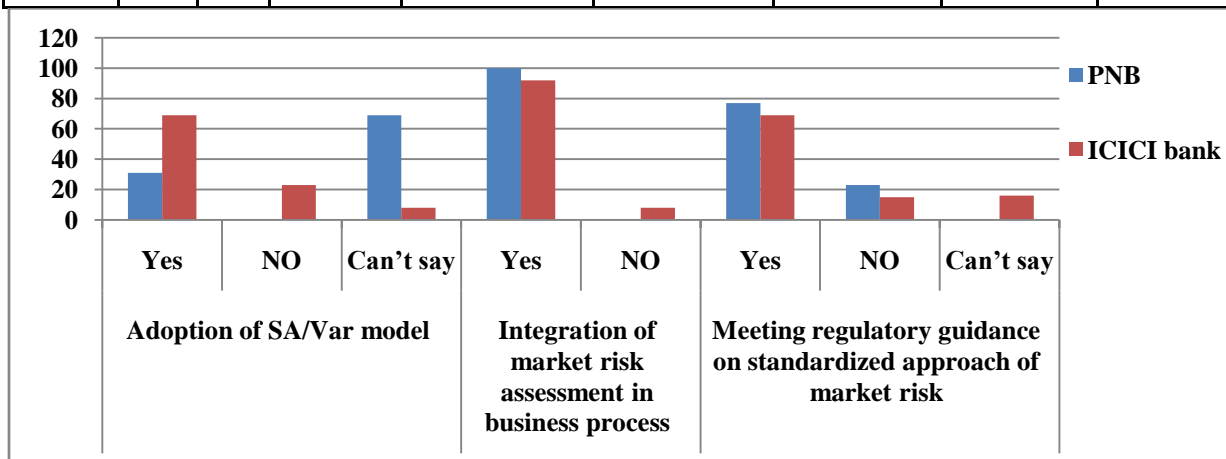nk bonds are an important determinant in deciding the market risk capital in PNB and ICICI bank. It is evident from the statistical analysis that a change in level of market risk capital brings changes in the investments mix.

Objective 2

Analysis of responses of employees of PNB and ICICI bank on market risk management during Basel II. The percentagewise responses by employees of PNB and ICICI bank on questionnaire are explained as under.

Table19: Rate the Concerns for Market Risk Management (Most Challenging)

|	Adoption of SA/Var Model			Integration of Market Risk Assessment in Business Process		Meeting Regulatory Guidance on Standardized Approach of Market Risk		
	Yes	NO	Can't say	Yes	NO	Yes	NO	Can't say
PNB	31		69	100		77	23	
ICICI bank	69	23	8	92	8	69	15	16

Most of the respondents of PNB could not comment on the issue of adoption of SA/VaR model of market risk assessment. Whereas maximum respondents of ICICI bank supported that adoption of SA/VaR was most challenging. Since during this period PNB did not completely migrate to model approach of market risk, respondents could not comment on this issue. Maximum number of respondents of PNB and ICICI bank expressed that integration of market risk assessment and meeting regulatory guidance on standardized approach of market risk were challenging for formulating a policy on market risk.

Table20: Rating of Market Risk Management Function of Your Bank

	Organizational Structure		Early Warning System		Risk Modelling Function		
	Highly Efficient	Efficient	Highly Efficient	Efficient	Highly Efficient	Efficient	Neutral
PNB	15	85	8	92		23	77
ICICI bank	69	31	46	54	69	31	
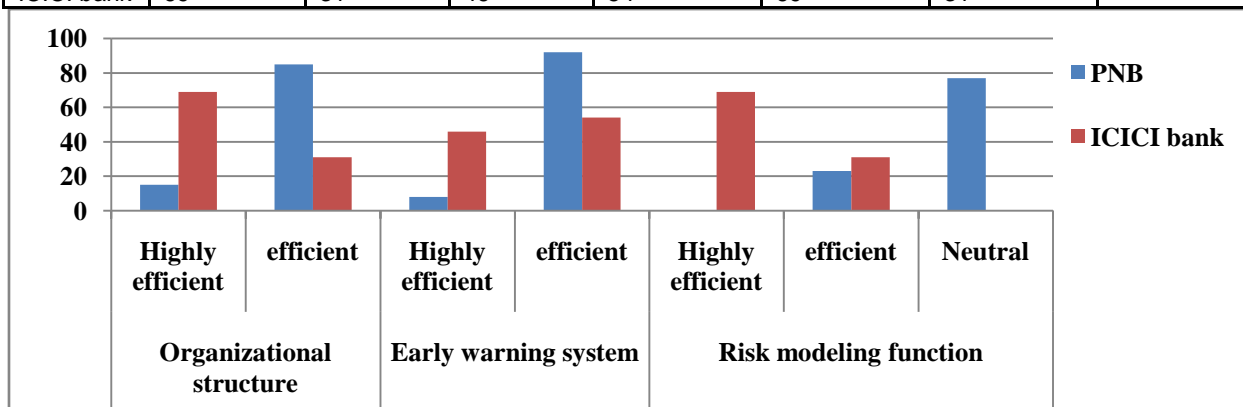
Organization structure and early warning system of both the banks were either highly efficient or efficient as observed by most of the employee of these banks. ICICI bank employees narrated that risk modelling functions of their bank, whereas PNB officials had no idea on the issue.

Conclusions

The research finds positive correlation with Market risk capital with interest related investment of PNB and ICICI bank during Basel II. There has been an increase in market risk capital in both these banks during Basel II except in the year 2013, in which the MRC in ICICI bank decreased due to decrease in general market risk weighted assets. Significant

Remarking An Analisation

relationship existed between MRC with G. Securities, bank bonds and equity in PNB. It indicates that though the bank has adopted adequate market risk management, the investment variables are significantly affecting the MRC. In contrast to this, ICICI bank maintained controlled market risk management resulting desired level of MRC revealing significant relationship is only found between bank bonds and MRC. Most of the respondents of PNB could not comment on the issue of adoption of SA/VaR model of market risk assessment as VaR module was yet to be fully implemented in PNB. Maximum respondents of ICICI bank supported that adoption of SA/VaR was most challenging. A large number of respondents of PNB and ICICI bank expressed that integration of market risk assessment and meeting regulatory guidance on standardized approach of market risk were challenging for formulating a policy on market risk.

Both the banks had robust organization structure and early warning system to manage the market risk during Basel II. Risk modelling function of market risk management was highly efficient as described by the employees of ICICI bank.

References
1. Matsakh, Altintas, & Callender, (2010): "Stress Testing in Action: Lessons from the financial crisis," Bank Accounting and Finance, February-March, pp18-27.
2. Munstermann, Beate and Jacob, David (2005) "Basel 2 and Banks: Key Aspects and likely Market Impact", Basel II – Implications on Business. The ICFAI University Press. pp 26-49
3. Raju, Thiripal and Acharya, Rajesh, (2010) "Journal of Social and Management Sciences" ISSN 0970-8448, ZDB-ID 190581-8. – Vol. 39.2010/11,3,p. 199-215
4. Singh, Manmeet and Vyas, R.K, (2011) "IUP Journal of Journal of Bank Management, 2011, volume x, Issue3, 34-48.
5. Verma, Dippi and Supatha, (2010) "Value at Risk as a Tool for Measurement and Control of Market Risk in Banking Sector", Contemporary issues and challenges in the Banking and Financial Sector in India. Excel Books. New Delhi. First edition- 2010. 251-261.